

Reply to Office Action dated 3/02/04

REMARKS/ARGUMENTS

In view of the following remarks, Applicant respectfully requests reconsideration and allowance of the subject application. Applicant acknowledges the requirement to cancel non-elected claims. Claims 12, 23, 32, 40, 42, and 44-45 are cancelled without prejudice. Claim 43 is amended and is in condition for allowance. This amendment is believed to be fully responsive to all issues raised in the 3/02/04 Office Action.

§103 REJECTIONS

Claims 24-31 stand rejected under §103 as being unpatentable over various combinations of US Patent No. 6,271,102 to Brouillette et al hereinafter referred to as "Brouillette."

Claim 24 recites, amongst other things, "wherein at least portions of the removing from the first side and removing from the second side form a slot through the substrate material." Brouillette discloses a "method and system for dicing a semiconductor wafer providing a structure with greatly reduced backside chipping and cracking, as well as increased die strength." (Brouillette, Abstract). Dicing is completely different than forming "a slot through the substrate material," which is a through structure formed within a substrate. Therefore, for at least this reason, claim 24 is allowable over Brouillette.

Claims 25-31 depend from claim 24 and are therefore allowable for at least the same reason as claim 24.

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Claims 1-11, 13-22, 24-31, 33-39, 41 and 43 stand rejected under §103 as being unpatentable over various combinations of Brouillette, US Patent No. 4,746,935 to Allen hereinafter referred to as "Allen", US Patent No. 6,238,269 to Pollard et al hereinafter referred to as "Pollard", US Patent No. 5,658,471 to Murthy et al hereinafter referred to as "Murthy", US Patent No. 4,687,100 to Michaelis et al hereinafter referred to as "Michaelis", and the Publication "Silicon Processing for the VLSI era" by Wolf et al, hereinafter referred to as "Wolf".

Applicants respectfully submit that there is no motivation to combine Brouillette and Allen. Allen discloses that the "general purpose of this invention is to provide a new and improved thermal ink jet printer and method of operation which overcomes the aforescribed disadvantages of the prior art and consequently provides a print head of decreased drop generator design complexity and characterized by an extended lifetime." (Col. 2, ll. 5-10). Allen further discloses that a "silicon substrate 30 includes a common ink feed-hole 32 in the form of a cylinder or slot through substrate 30 and configured using diamond saw blade or laser drilling techniques." (Col. 3, ll. 45-48). Allen does not suggest that there is a problem with this approach to forming slots or a need to improve it.

Brouillette discloses that "chips flexed in bending such that the active face and diced edges are placed in tension show large strengths with little variability while those flexed such that the non-active face and diced edges are placed in

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tension show small strengths with large variability.” (Col. 1, ll. 44-48). These problems relate to cuts that separate portions of a semiconductor die from each other. There is no indication in Allen or the other cited references that such flexing occurs when a slot is formed through a substrate as disclosed in Allen. Therefore, for at least this reason, there is no motivation to combine Allen with Brouillette.

In addition, Applicants respectfully point out, that Brouillette discloses using drills due to their relative speed, and that other techniques such as etching, wet or dry, and sand drilling require a greater amount of time to form a path through a substrate and therefore would not be useful with a dicing operation, such as that disclosed by Brouillette.

Claim 43 is amended to recite “the slot being defined, at least in part, by first and second sidewalls and first and second endwalls extending therebetween, and wherein said making forms a first portion of the end walls and said removing forms a second portion of the end walls, and wherein the first and second portions of each of the end walls meet at angle greater than or equal to ninety degrees relative to the substrate.” Such a limitation is supported by the specification and drawings as originally filed and is not taught, suggested, or disclosed by the art of reference.

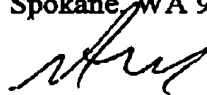
Therefore, Applicants respectfully request that the §103 rejection of claims 1-11, 13-22, 24-31, 33-39, 41 and 43 be withdrawn.

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Conclusion

Claims 1-11, 13-22, 24-31, 33-39, 41 and 43 are believed to be in condition for allowance. Applicants respectfully request reconsideration and prompt issuance of the present application. Should any issue remain that prevents immediate issuance of the application, the Examiner is encouraged to contact the undersigned attorney to discuss the unresolved issue.

Respectfully Submitted,
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Dated: 5/28/04

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